

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF SOUTH CAROLINA
ANDERSON DIVISION**

AMERICAN WHITEWATER, et al
Plaintiffs,

V.

THOMAS TIDWELL, in his official capacity as
Chief of the United States Forest Service; et al

Defendants.

$$\begin{array}{c}) \\) \\) \\) \\) \\) \\) \\) \\) \\) \end{array}$$

Civil Action No 8:09-cv-02665

I am filing the attached document related to this matter:

DECLARATION OF DR. MARK BAIN

DATED: October 15, 2009

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF SOUTH CAROLINA
ANDERSON DIVISION

AMERICAN WHITEWATER, et al.)	
)	
Plaintiffs,)	
v.)	
)	
THOMAS TIDWELL, in his official capacity as Chief)	Civil Action No.
of the United States Forest Service, et al.)	
)	
Defendants.)	

DECLARATION OF DR. MARK BAIN

My name is Dr. Mark Bain. I am an Associate Professor in the Department of Natural Resources at Cornell University. I received my Ph. D. from the University of Massachusetts. I am a quantitative aquatic biologist and ecosystem scientist who conducts both basic research and studies driven by current management issues. My specialties are fish and macroinvertebrates in lakes, streams and estuaries. Statistics, modeling, and biological assessment are heavily used in most research and teaching. My current research involves testing complex systems theory, planning ecosystem restoration and conservation, and ecology of pathogens in Great Lakes waters. My environmental policy experience includes ecosystem management, endangered species protection, energy - environment conflicts, watershed conservation, and international conservation planning.

I have reviewed the document "Environmental Assessment Managing Recreation Uses on the Upper Chattooga River" to provide my opinion on the portions of that document that address the fish population in the headwaters of the Chattooga River, at the request of American Whitewater.

Conservation and restoration of the southern genotype of brook trout (*Salvelinus fontinalis*) has long been a priority of fishery biologists in the Appalachian Mountain Region of the middle and southern states. The American Fisheries Society, the primary professional fishery organization of North America, has adopted a policy that southern brook trout are a significant component of the Appalachian region's ecological integrity, biological diversity, and sportfishing legacy (1). The decline of brook trout in the region has long been recognized (2-4) and well documented (5-7). One factor implicated in the decline of brook trout populations has been the establishments of nonnative rainbow trout (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*) in streams inhabited by brook trout.

The most closely studied location for this issue has been the Great Smoky Mountains National Park where the National Park Service management policy is to protect and preserve the naturally functioning ecosystem (8). Nonnative dominate substantial lengths of trout streams in the Park,

and since the mid-1970s the Park Service has reduced and eradicated rainbow and brown trout trout to promote expansion of stream lengths used by brook trout. Evaluations of this management (9-11) have documented increased brook trout numbers following reduction in nonnative trout. Restoration of brook trout streams by reduction and elimination of rainbow and brown trout continue to this time in Great Smoky Mountains National Park (<http://www.nps.gov/grsm/naturescience/dff109-researchfisheries.htm>).

The mechanism of impact of nonnative trout on brook trout is less clear and different research findings have been reported. The relative abundance and stream lengths of domination by rainbow and brook trout have been found to change back and forth through time in the middle Appalachian region (TN, 12). Competition between rainbow and brook trout at the earliest life stage has been found to favor rainbow trout (13), and more frequent poor reproduction and lower fecundity of brook trout can explain rainbow trout dominance in the southern Appalachian Mountains (14). Behavioral displacement is also possible because stream trout are territorial but the mechanism has not been well studied. The trend for brook trout to be disadvantaged by stocked rainbow and brown trout appears most common on the margin of the brook trout range - south of Virginia and North Carolina (15).

Regardless of the mechanism and extent of impact on brook trout, stocking of nonnative trout species would not favor brook trout and would depart from management southern Appalachian Mountain streams for ecological integrity and natural trout populations. The southern Appalachian brook trout remains a species that is sensitive to human alterations of the environment and disruptions of the natural stream fish fauna.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on the 8th day of October, 2009.


Mark Bain, PhD

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